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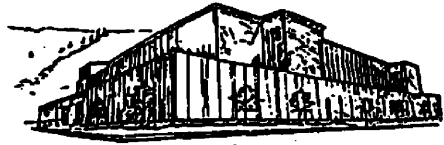
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THE INVESTIGATION OF THE PERCEIVED PREDICTABILITY OF OPTIMISM
AND EXERCISE

by

Adrienne M. Carlson

B.A. University of Minnesota-Duluth, 2002

Presented in partial fulfillment of the requirements

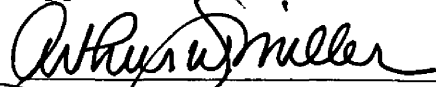
for the degree of

Master of Science

The University of Montana

2004

Approved by:



Committee Chair



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ABSTRACT

Carlson, Adrienne M., October, 2004

Health and Human Performance: Exercise and Performance Psychology

The Investigation of the Perceived Predictability of Optimism and Exercise

Committee Chair:  Arthur Miller, PhD

Non-adherence and dropout rates are high among exercise participants in the US, with only 15% of the population participating in regular physical activity and 25% reporting no physical activity at all (CDC, 1999). Physical inactivity is more common amongst ageing adults than young adults; only 40% of ageing adults are adequately active and few are meeting the standards of optimal activity (CDC, 1999; Fontaine, 1995). In the US, 64% of adults are either overweight or obese (CDC, 2004). Exercise improves weight issues and weight factors, along with contributing to social, psychological and health improvements (Jakicic, 2002; Plante, 2000; Rabinowitz, 1992). The purpose of this study was to explore optimism in 30-60 year olds to predict success or failure in maintaining an exercise program. A total of 60 subjects, 53 optimists and 7 pessimists, sent back a questionnaire packet containing the Optimism and Pessimism Questionnaire and the Physical Activity Survey. Frequencies of gender, education level, times exercised per week, duration of each session, length of maintenance, past maintenance, existence of barriers, the varieties of barriers, types of exercise and scores from optimism and pessimism questions were found. Discriminant Functional Analysis was used to calculate the predictability of optimism using exercise factors listed above. For times exercised per week p-value of .29 and predictability of 51%; duration of each session p-value was .78 and predictability was 75%; maintenance p-value was .75 and predictability was 44%. No significant results were found. Crosstabs were calculated to examine frequency distributions by percentages and p-value based on chi-square of past maintenance of physical activity, existence of barriers, the variety of barriers and types of exercise within optimism and pessimism subjects. Most categories followed the normal distribution of 88% optimists and 12% pessimists. Cardio machines had 8% more optimists and 8% less pessimists than the normal distribution.

Overall the results found exercise factors could not predict optimism. Optimism was seen in all levels of exercise. This study can be used as a model for future studies in hope to provide more research on how have individuals starts and maintains an exercise program.

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CHAPTER 1: INTRODUCTION

It is incomprehensible to imagine that 64% of US adults are either overweight or obese (CDC, 2004b). Overweight, defined as a body mass index of 25-29.9, is associated with an increase in morbidity and mortality rates due to cardiovascular disease and other chronic diseases. Every year 300,000 individuals die due to an obesity-related condition, and treatment for obesity-related conditions exceeded 99 billion dollars in 1995 (Jakicic et al., 2002). When exercise has been maintained, it has improved weight issues and weight related factors, such as total daily energy expenditure, fat oxidation and insulin sensitivity (Jakicic et al., 2002). Additionally, it helps control weight by producing lean muscle and reducing body fat (CDC, 2004a).

Exercise has many other benefits besides body weight management; it contributes to social, psychological and health improvements (Plante et al., 2000; Rabinowitz & Melamed, 1992). Exercise reduces state anxiety, depression and stresses in one's life and fosters improvements in mood and feelings of well-being (CDC, 2004a). Participating in physical activity also increases an individual's quality of life (Rabinowitz & Melamed, 1992; Courneya et al., 2003).

Non-adherence and dropout rates among exercise participants in the United States are exceptionally high, with only 15% of the population participating in regular physical activity and 25% reporting no physical activity at all (CDC, 2004a). Approximately 50% of individuals who do initiate a regular exercise program will drop out within six months.

Taking into consideration the data on exercise adherence, it is important to look at factors that will help individuals get involved and continue to exercise. Previous research has found a number of correlations with exercise initiation and adherence to demographic

factors, behavioral attributes and skills, environmental factors and psychological factors (Gyurcsik & Brawley, 2001). In this study the factor being examined and defined in the following paragraph for exercise adherence is optimism.

Optimism is defined as a generalized expectancy that good things will happen (Kavussanu & McAuley, 1995). It is associated with enhanced motivation, persistence and performance related to exercise adherence (Synder & Lopez, 2002). This study will attempt to identify optimism in individuals to predict success or failure in maintaining an exercise program.

Problem

Administrated by the National Center for Chronic Disease Prevention and Health Promotion, the surgeon general's report determined physical inactivity more common amongst older adults than younger adults, and additionally amongst women than men (CDC, 2004a). Concentrating on aging adults world wide, only 40% are adequately active and few are meeting the standards of optimal activity for 30 to 60 minutes of moderate exercise everyday. This is a significant problem considering exercise is important for middle age individuals to maintain their current health and as preventive medicine. Concurrently, exercise reduces the risk of dying from coronary heart disease, developing high blood pressure and diagnosis of colon cancer or diabetes (CDC, 2004a).

Purpose

The primary purpose of this study was to explore levels of optimism and exercise

factors of individuals between the ages of 30-60. Exercise factors for this study included age, education level, times exercised per week, duration of each session and length of maintenance. The secondary purpose of this study was to look at frequency distributions of past maintenance, the existence of barriers, the variety of barriers and types of exercise between optimists and pessimists.

Significance of Study

With exercise adherence at a low level, it is important to find factors that aid individuals in starting and maintaining an exercise program. As aforementioned, middle-age individuals must be conscious of their health and exercise behavior to better maintain their bodies into elderly years. Individuals who were active later in life cut their risk of developing heart disease and lower their chances of dying early when compared to those who only exercised when they were younger ((McNicholas, 2002). Considering the impact maintaining an exercise program has on mental and physical health it is timely and relevant to conduct countless studies on factors that help individuals maintain an exercise program, each study gives a better understanding of how to keep individuals adhering to an exercise program.

Hypothesis

There will be no experimentally important or consistent predictability of optimism using exercise factors among 30 to 60 year olds.

Another research question being examined is if types of exercise and barriers of

exercise predicting optimism can be generalized from the sample of exercisers to the larger population of exercisers.

Limitations

The study was conducted under several basic limitations. First, it was assumed each of the subjects filled out the Optimism and Pessimism Scale truthfully and was able to answer honestly for each question asked. Second, it was assumed individuals filled out the physical activity survey correctly; that subjects accurately gave the number of years they have maintained physical activity, the duration of each session, number times per week, types of exercise, listed all barriers subjects face to maintain exercise, previous participation of exercise and their educational background.

Delimitations

The boundaries for this study were individuals varying from 30-60 years old who had been currently involved in an exercise program or just getting started in one. All subjects were recruited from different types of fitness facilities. Individuals also had to self-rate their exercise habits and explain their barriers.

Definition of Terms

Maintenance of Physical Activity: participating in physical activity 3-5 times per week, every week consistently.

Optimism: Generalized expectancy that good things will happen (Kavussanu &

McAuley, 1995).

Optimism and Pessimism Scale: Rates each individual's optimism and pessimism; 18 questions rating optimism, 18 rating pessimism and 20 filler items.

Pessimism: Negative bias in perceptions and expectations in features of life (Dember et al., 1989b).

Physical Activity Survey: Measures an individual's current and history of physical activity. Number of times per week, minutes per session, months or years of maintenance, previous exercise habits, barriers to maintaining physical activity programs and types of physical activity an individual participates in:

CHAPTER 2: REVIEW OF LITERATURE

Exercise Benefits

Middle age adults can potentially increase their life span and their chances of living a healthier life by reducing health risks that have been associated with cancer, heart disease, stroke, injury and chronic lung disease (McNicholas, 2002). They have an opportunity to promote health and possibly prevent disease by maintaining an exercise program.

There are multiple benefits to exercising; it attributes to social, psychological, health and body image improvements along with improving mood and the ability to cope with stress (Plante et al., 2000; Annesi, 1992). Exercise also slows the decline of brain tissue, which will improve the cognitive function in older adults (Dik et al., 2003; Colcombe et al. 2003). Maintenance of an exercise program also reduces state anxiety, depression, neuroticism and stresses for people of all ages and both sexes (Rabinowitz & Melamed, 1992). Researchers have suggested that exercise may confidently be used as a replacement for traditional psychological intervention, e.g. psychotherapy or drugs (Annesi, 2004).

Netz & Raviv (2004) studied the effects of self-efficacy related to physical activity with age. Over 2,000 participants, ages 18-78, agreed to have an interview and fill out a questionnaire on their demographics, self-efficacy in one's ability to adhere to physical activity, outcome expectations and self-evaluated satisfaction. Older adults were found to have lower self-efficacy in relation to physical activity and expected fewer benefits from exercising than younger adults. However, older individuals who engaged

in physical activity did rate themselves as more active and fit than their same age group and experienced benefits from exercising. With all ages, an increased amount of physical activity generated a higher self-efficacy score. Fontaine and Shaw (1995) found similar results with elder adults being physically fit. They had clear goals in mind, held strong positive values for their activity choices, perceived few concerns or doubts about their involvement and had loyal companions to exercise with.

Another study done on psychological benefits of exercising was conducted with 96 women ranging from ages 21-80 who had not previously been participating in any physical activity (Annesi, 2004). The control group, ages 21-80, continued not to participate in physical activity, while the exercise group, split into a young category, 21-45 and older category, 55-80, trained with an exercise leader. The Profile of Mood States, with subscales of tension, depression, vigor and fatigue were given to all groups before exercising began and at the end of a 10-week interval. No differences were shown in week one. Significant differences ($p \geq .05$) in residual scores were found between the exercise groups and control group within all four subscales, with the exercise group improving on all four subscales. There was no difference found between the two exercise groups when comparing scores on the subscales; implying at any age, exercise can benefit one's overall mood

Plante, LeCaptain, and McLain (2000) found even the perception of fitness was a good predictor of coping with stress. Individuals feel better and improve psychological functioning because of their conviction from beliefs of physical activity. Psychology students ranging in age from 18-23 years completed a series of self-report questionnaires that assessed perceived physical fitness, perceived stress and coping, defensiveness, self-

esteem, hope and anxiety. For seven consecutive days subjects also wore a small pedometer and recorded number of steps taken at the end of each day. Subjects who just believed they were physically fit scored high on the hope and self-esteem scales and ranked high with ability to cope with stress.

Exercise is also found to improve the quality of life among cancer survivors (Courneya et al., 2003). One hundred and eight cancer survivors were recruited and split into a control group (group psychotherapy class (GP)) and an experimental group (group psychotherapy class along with exercise). Exercise for the experimental group consisted of a 10-week home-based, moderate intensity exercise program. A physical fitness test was given at the beginning of the study for both groups and again at the end of 10 weeks. Findings exhibited an improved QOL in cancer survivors who exercised along with attending group psychotherapy class (GP), than attending GP alone. Significant beneficial effects for functional well-being and fatigue for the experimental (exercise) group were also found.

Women and Exercise

Menopause is linked to weight gain, onset of osteoporosis due to bone mineral loss, coronary heart disease and diabetes (Kemmler et al., 2002; Jancin, 1999). Hormonal changes during menopause are accompanied with reduced physical fitness, impaired health and lowered quality of life (Kemmler et al., 2002). Bone-building drugs like hormone replacement therapy (HRT), calcitonin, estrogen receptor modulators and bisphosphonates have been used to prevent and treat osteoporosis, but are costly and show detrimental effects (Cussler et al., 2003). These effects include coronary heart

disease, increase stroke risk, thrombosis and breast cancer (Kemmler et al., 2002).

Maintaining an exercise program with some weight bearing activities has shown to be a less expansive, time efficient, safer and effective alternative than using bone building drugs (Cussler et al., 2003; Kemmler et al., 2002; Winter-Stone & Snow, 2003). Women who exercise during menopause show greater bone mineral density (BMD) and higher quality of life than those that do not exercise (Kemmler et al., 2002). Women can largely avoid menopausal weight gain and adverse lipid changes through pre-menopausal adoption of a low-fat diet coupled with moderate physical activity (Jancin, 1999). Resistance exercise for older postmenopausal women can lower the risk of falls by improving the lower body strength, power and stability (Winter-Stone & Snow, 2003).

A study was done on 137 post-menopausal women studying the impact exercise has on the side effects of menopause (Kemmler et al., 2002). Participants were divided into an exercise group (59 women) and a control group (41 women). Both groups were given vitamin D and calcium supplements. The exercise group did a warm-up, jumping exercise, strength training and stretching, four times per week. At the end of three years, the exercise group showed an increase in isometric strength of the trunk extensors and flexors and hip flexors, while there was no difference in the control group. BMD changes at lumbar spine and hip increased significantly by 1.3% and decreased by 1.2% in the control group. Insomnia and mood change increased positively in exercise group and increased negatively in the control group. Life satisfaction also increased in exercise group, where no changes occurred in the control group. Endurance and aerobic capacity, time under load, VO₂ max, VE all increased in the exercise group and decreased in the control group.

Exercise and Memory

Maintaining an exercise program has shown to be inversely associated with cognitive decline in older individuals (Dik et al.; Colcombe et al., 2003). It is beneficial for cognition in that it stimulates trophic factors and neuronal growth, providing reserve against later cognitive decline and dementia.

From the third decade of life and on, tissue in the brain starts to shrink in a pattern closely patterned by declines in cognitive performance (Colcombe et al., 2003). The brain gradually loses tissue density in the frontal, parietal and temporal cortices. With cardiovascular fitness in older adults, it was found loss of tissue density was substantially reduced in these cortices of the brain. High-resolution magnetic resonance imaging was used on 55 older adults looking for variation in tissue density as a function of age, aerobic fitness and other health markers. The images show anatomical differences in the white and gray matter in the brain between subjects who were physically fit and those that were not.

Early life physical activity has also been shown to impact cognitive functioning in elder years. Dik, Deeg, Visser, and Jonker (2003) studied the effects of early life physical activity to cognition at an older age with participants (ages 55-85) in the Longitudinal Aging Study Amsterdam. Subjects were interviewed and tested at home by trained interviewers on general cognitive function, information processing speed and early life physical activity. They found, independent of current physical activity, a significant association of early life physical activity to the level of information processing speed; those exercising during early life had a higher level of information speed.

Optimism

Optimism is defined as a generalized expectancy that good things will happen (Kavussanu & McAuley, 1995; Davidson & Prkachin, 1997). Optimism is mentioned frequently as one of the human strengths in the field of positive psychology. Positive psychology is changing the focus on repairing the worst things in life to building upon the best qualities of life. It is making the knowledge known of what makes human life most worth living, most fulfilling, most enjoyable and most productive (Davidson & Prkachin, 1997). This field focuses on assets to strengthen the positive qualities of an individual (Seligman, 1998).

Optimistic individuals have an increased problem-focused and decreased avoidant strategy because they believe their goal is attainable and will continue to strive toward it (Davidson & Prkachin, 1997). This leads to differences in effort exertion and goal attainment by influencing health-enhancing or health-promoting behaviors. Optimism influences one's decisions about striving or giving up by viewing desired outcomes as attainable. Positive thinkers have a significantly higher coping self-efficacy and lower decisional struggle than negative thinkers (Gyurcsik & Brawley, 2001).

Optimism- Health Benefits

Optimism leads one to engage in health promoting behaviors and benefits of physical well-being. Optimistic individuals report less reaction to or a faster recovery from stressful health events (Davidson & Prkachin, 1997; Rabinowitz & Melamed, 1992; Radcliffe & Klein, 2002). Optimism is linked to reports of good health, quick recovery

from health difficulties and psychological well-being. Optimism is associated with quick recovery from heart attacks, reduced anxiety and lower physical symptoms (Hasan, 2002; Radcliffe & Klein, 2002). Studies have shown individuals with high optimism show lower blood pressure, more satisfaction with life, possess a lower risk of having a fatal heart attack and knew more about risk factors for diseases and illnesses.

Differences of flu reporting were studied between optimistic individuals and pessimistic individuals. Hamid (1990) conducted a study of 262 undergraduate students who completed the Life Orientation Test (LOT) (scoring optimism) at the beginning of spring term. The subjects, at a subsequent class, were given a flu episodes questionnaire that contained questions about subjects' experience in flu, stress and health related behaviors. Students were also asked what steps they took to prevent likelihood of flu symptoms and whether they monitored their nutrition and exercise. Researchers found optimists reported significantly less symptoms of the flu than pessimists. Pessimists also recalled their flu episodes as more acute, prolonged and in greater detail. Optimists undertake exercise and monitor their nutrition significantly more regularly than pessimists.

Radcliffe and Klein (2002) conducted study measuring optimism and risk factors for heart attacks. Subjects, consisting of 146 individuals ranging in ages from 40-60, took most of the test via computer. Information filled out on the computer included risk perceptions and worry about heart attacks in comparison with others, prior knowledge and beliefs of heart attacks and the Health Risk Appraisal (43 questions regarding daily habits, family history and demographics). Subjects were also asked to read a risk factor essay of their choice on the computer. Away from the computer subjects filled out the

Life Orientation Test (measuring optimism) and a 32-item paper-and-pencil test of the material they had read in the essay. The findings stated individuals high on optimism had lower blood pressure, exercised more, were more satisfied with life and possessed a lower risk of having a fatal heart attack. Subjects who were more optimistic illustrated high self-awareness about their risk status and knew more about the risk factors involved.

Several theorists suggest that positive health practices are an outcome of optimism; optimism influences health practices because optimists are more likely to follow treatments and change behaviors that might compromise their health (Scheier & Carver, 1992; Seligman, 1998). Optimistic beliefs and attention to threatening health information were looked at within a sample of 57 college-aged students (Aspinwall & Brunhart, 1996). Optimistic beliefs of one's health predicted greater attention to risk information and greater levels of recall overall.

Peterson, Seligman and Vaillant (1988) did a longitudinal study on investigating whether individuals who explain bad events pessimistically in early adulthood have more illness in middle to late adulthood. They found those men who explained bad events pessimistically, with stable (long lasting factor), global (affects a wide-domain of activities) and internal causes (points at the self) at age 25 were less healthy later in life than men who made unstable, specific and external explanations, toward bad events. Thoughts about pessimistic explanatory style putting one at risk for poor health is that individuals who offer stable, global and internal explanations become passive in the face of illness and tend to be poor problem solvers. They may experience severe bad events because they never deal with the crisis at hand and as a consequence have an increased chance of illnesses.

Unrealistic Optimism

There is a possibility that individuals may be too optimistic or optimistic in a passive way in which individuals simply wait for positive outcomes without exerting any effort on their part-reducing the probability of their success (Scheier & Carver, 1992). This is unrealistic optimism. Unrealistic optimism individuals are those who believe they are unlikely to suffer from future health problems across life event domains as compared to their peers (Davidson & Prkachin, 1997). From this belief, researchers believe these individuals are at an increased risk for later health difficulties as result of decreased motivation to engage in health-protective behaviors. When reporting health information, unrealistic optimism are seen with those who report lowered relative risk for impractical reasons instead of those who report lower relative risk for realistic reasons.

In a study done by Madey and Gomez (2003) of 46 younger adult, 46 middle-age adults and 44 older adults, they found unrealistic optimism reduced for age-related medical conditions for all age groups, this reduction of unrealistic optimism came more pronounced at midlife when people develop more health-related self-concepts. These findings may have implications for how individual's perceptions of medical conditions are being related to aging affects, their likelihood to seek treatment or engage in preventive behaviors. Younger adults may not engage in preventive behaviors early in life if certain medical conditions are perceived to be the inevitable outcome of getting older.

Optimism and Exercise

Individuals who are physically active on a regular basis view their activities as

fun and enjoyable, while individuals who are not physically active identify more barriers being involved to exercising (Fontaine & Shaw, 1995).

Kavussanu and McAuley (1995) at the University of Illinois conducted a study to find the relationship between reported physical activity and optimism. Subjects recruited from health clubs were asked to complete the Physical Self-Efficacy scale, trait form of the State Trait Anxiety Inventory, Optimism and Pessimism Scale and their current level of physical activity involvement. The physical activity questions asked how many times a week they exercise, average duration of their workout, intensity of their workout on a 1-10 scale, type of exercise they engage in and how many months or years they had been exercising. Kavussanu found high-active individuals are more optimistic and less pessimistic than inactive or low active individuals. High-active individuals were defined as those who exercised four or more times every week. Those subjects who were more optimistic also showed lower levels of trait anxiety and the higher feelings of mastery after completing an exercise workout.

McNicholas (2002) in her study found there was a positive relationship between optimism and health practices among aging adults. Two hundred and two subjects ranging from ages 40-60 took a series of 4 tests, Personal Lifestyle Questionnaire, Personal Resource Questionnaire⁸⁵- Part 2, Rosenberg Self-Esteem Scale and Revised Life Orientation Test. Social support, self-esteem and optimism were all positively related to positive health practices. A concluding thought for this study is that optimists are inclined to engage in healthy behaviors and pursue goals that are health related.

Optimism has been correlated positively with job performance, sales productivity and academic performance (Rabinowitz & Melamed, 1992). Forty-six blue collar

workers completed questionnaires containing questions about beliefs, exercise self-efficacy, health locus of control, the Life Orientation Test (measuring optimism) and outcome variables of time for exercise and eating habits. It was found engagement in physical exercise was correlated with higher levels of optimism, causing higher exercise self-efficacy. This is coupled with confidence in the person's ability to carry out leisure exercise activities on a long-term basis.

Gyurcsik and Brawley (2001) conducted a study on big and little optimism; big optimism dealing with generalized expectations about longer term positive outcomes and little optimism reflecting specific expectations about acute positive thoughts on a daily basis. Acute thoughts would occur when individuals consider whether to engage in physical activity on a day-to-day basis. Subjects were 85 healthy individuals between ages of 14 and 74 recruited from a health club, in which four months prior to data collection had been struggling with a regular exercise. Each subject completed a questionnaire that consisted of measurements of dispositional optimism, tone and frequency of acute exercise, decisional struggle, coping self-efficacy and exercise intention. Gyurcsik found those who had more daily positive thoughts than negative about exercise were more motivated to exercise and participate daily and were more optimistic to schedule, plan and manage regular weekly exercise for a longer period of time.

Optimism and pessimism levels may differ depending on the time of day it is and energetic arousal. A study done on subjects between the ages of 19-41 years measured optimism, happiness and physical good feelings three times during the day; morning, afternoon and after a rapid walk at any time (Thayer, 1987). It was found in late morning

or after a 10-minute brisk walk, energetic and calm state is associated positively with optimism, personal problems, happiness and physical good feelings. During mid-to late afternoon, during associated state of low energy and high tension, personal problems were take to mean as more serious and less soluble, showing signs of pessimism.

CHAPTER 3: METHODOLOGY

The hypothesis examined was there will be no experimentally important or consistent predictability of optimism using exercise factors among 30 to 60 year olds. Exercise factors include age, education level, times exercised per week, duration of each session and length of maintenance of physical activity. The second research question is if types of exercise and variety of barriers can predict optimism and be generalized from our sample of exercisers to the larger population.

Subjects

Sixty subjects, 49 females and 11 males, with a mean age of 42.7 years participated in this study. Criteria for subjects included being between the ages of 30-60 years and currently involved in a physical activity program. Educational backgrounds of subjects were 11.7% with a high school diploma, 23.3% with some college, 6.7% with an associate degree, 35.0% with a bachelor degree and 23.3% with post-college education.

Recruitment of subjects was from local health clubs, the university swimming pool and city league intramural sports in Missoula, MT. Intramural sports included co-recreation soccer and softball, women's volleyball and men's and women's soccer.

Measures

Two instruments were given to subjects in a questionnaire packet. The first was the Optimism and Pessimism Questionnaire which rates whether an individual is more

optimistic or pessimistic. The second instrument was the Physical Activity Survey which was given to gain an understanding of each subject's level of physical activity.

Optimism and Pessimism Questionnaire. Developed by William N. Dember and colleagues (1989b), this questionnaire was used to rate each subject's level of optimism and pessimism. The scale consists of 56 statements: 18 rating pessimism, 18 rating optimism and 20 filler items. Filler items are general statements and not linked to optimism or pessimism. An example of an optimism statement is, "When I undertake something new, I expect to succeed." A pessimism statement is, "Even when things in my life are going okay, I expect them to get worse soon." Each statement was scored on a 4-pt Likert Scale ranging from strongly disagree = 1 to strongly agree = 4. Optimism and pessimism scores are summed to provide a single score for each subscale.

Instrument Validity: Seven psychology graduate students at the University of Cincinnati reviewed each item and judged whether it was optimistic, pessimistic, or a filler item (Dember et al., 1989b). Rate agreement was 89.72%, with 86% agreement with all items except for six. The six were looked at more closely and four items were dropped due to the low inter-judge agreement. The mean percentage for the ultimate 36-item pool was 91.36%.

Instrument Reliability: One hundred and six subjects ranging in ages from 18-30 assessed this instrument for test-retest reliability (Dember & Brooks, 1989a). Subjects received a booklet containing the optimism/pessimism questionnaire and were tested twice, with a two week interval. Satisfactory results were found, with test-retest reliability as .75 for optimism and .84 for pessimism ($p < .0001$ for both cases).

Physical Activity Survey. Developed by the primary researcher of this study, the Physical Activity Survey was given to gain an understanding of each subject's level of physical activity. The survey consists of nine questions, with the first question asking subjects to indicate whether or not they are currently exercising. If they answer yes, questions continue to determine how many times a week the subjects exercise, the average duration, the current length of maintenance of exercise programs, past exercise habits, barriers they encounter to maintaining exercise and the exercise activities in which they are currently participating in.

Face and content validity were determined by a panel of 40 experts in the field of health and human performance. Changes to the survey were made based on pilot groups' responses.

Procedure

The primary researcher brought the questionnaire packet to the managers at an assortment of fitness facilities and explained the purpose of the study. Fitness facilities included a variety of local health clubs, the university swimming pool and the intramural coordinator of Missoula Park and Recreation. The questionnaire packet consisted of an information page, the Optimism and Pessimism Questionnaire and the Physical Activity Survey. The information page explained the purpose, benefits, procedure of the study and stated that participation was completely voluntary and anonymous. The primary researcher's contact information was listed for anyone who had questions or comments. The managers of the fitness facilities called the primary researcher by phone if they wanted to participate in the study.

Each type of fitness facility required a different procedure for the recruitment of subjects. The participating health clubs did not want any unknown person soliciting their members; they requested to have their employees hand out the questionnaire packets to interested members. Questionnaire packets were brought to an adult swim class at the university swimming pool. Packets were left near the pool and any interested individuals picked one up after class was over. At the health clubs and swim class, subjects were asked to fill out the questionnaire packet and send them back to the researcher by way of a self-addressed envelope attached to the back of the questionnaire packets.

After receiving consent from Missoula Parks and Recreation the researcher attended a variety of intramural sports which included co-recreation soccer and softball, women's volleyball and men's and women's soccer. At the conclusions of each game interested teams were given an explanation of the study and any interested subjects were furnished with a questionnaire packet. Subjects had the choice of filling out the questionnaires at the field or taking it with them and sending it back by way of the self-addressed envelope attached. All subjects took the packet home with them to fill out and send back.

Research Design

The collection of questionnaire packets ended three weeks after the last round of packets had been given out. One hundred and forty questionnaire packets were accepted by a variety of potential subjects and 72 surveys were sent back. Fourteen subjects were dropped, 12 because of the age barrier and two because of incomplete information.

Optimism and pessimism scores were first calculated for each subject by adding

the 18 questions of optimism and adding the 18 questions of pessimism. Subjects were classified optimistic if their optimism score was higher than their pessimism scores. Pessimistic subjects were classified pessimistic if their pessimism score was higher than their optimism score.

Frequencies of gender, education level, times exercised per week, duration of each session, length of maintenance, past maintenance of physical activity, the existence of barriers, the variety of barriers, types of activities and scores of optimism and pessimism were calculated for the whole cohort, the optimistic group and the pessimistic group. The existence of barriers limiting subjects from physical activity included being overweight, lack of energy, time constraints, boredom, outside factors (family, work), feeling pain, cost and illness. Types of exercise subjects participated in were cardiovascular machines, weightlifting, running, walking, hiking, aerobics, biking, swimming, skiing/snowboarding and participating in sports.

Means of age, times exercised per week, duration of each session, length of maintenance of physical activity and scores of optimism and pessimism were calculated from the whole cohort, the optimistic group and pessimistic group.

To calculate the predictability of optimism using exercise factors, Discriminant Functional Analysis (DFA) was used. Discriminant Functional Analysis uses a single grouping variable that is nominal to determine whether there are differences among two or more groups. Experimental importance of DFA is 70% predictability with an alpha at .05 level. Optimism is the criterion variable and the exercise factors are the predictor variables. Exercise factors included are age, education, times exercised per week, duration of each session and length of maintenance. Discriminate Functional Analysis

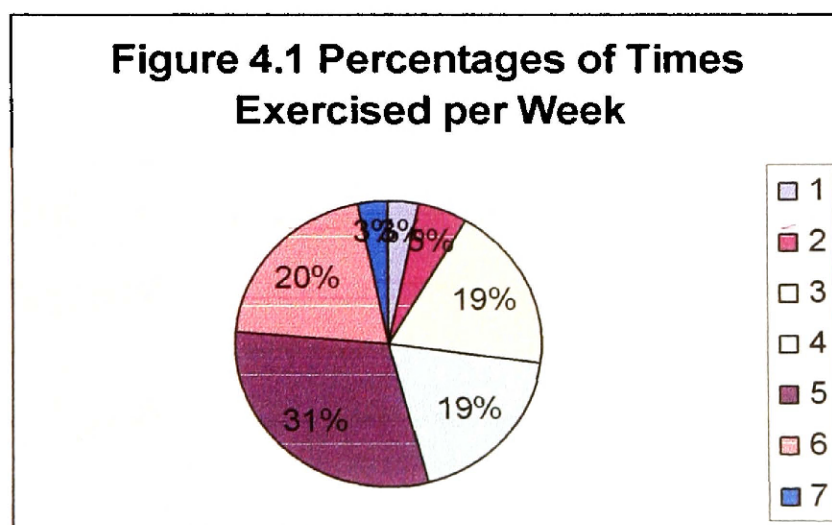
was run on the whole cohort and also on the female sample population.

Crosstabs were used to find frequency distributions of types of exercise, the variety of barriers, past maintenance and the existence of barriers within optimistic and pessimistic subjects. Crosstabs calculate frequency distributions by percentages and the p-value (.05 level) based on chi-square. Chi-square looks at whether or not samples are different enough in some characteristic that they can be generalized to the population that samples are drawn from.

CHAPTER 4: RESULTS

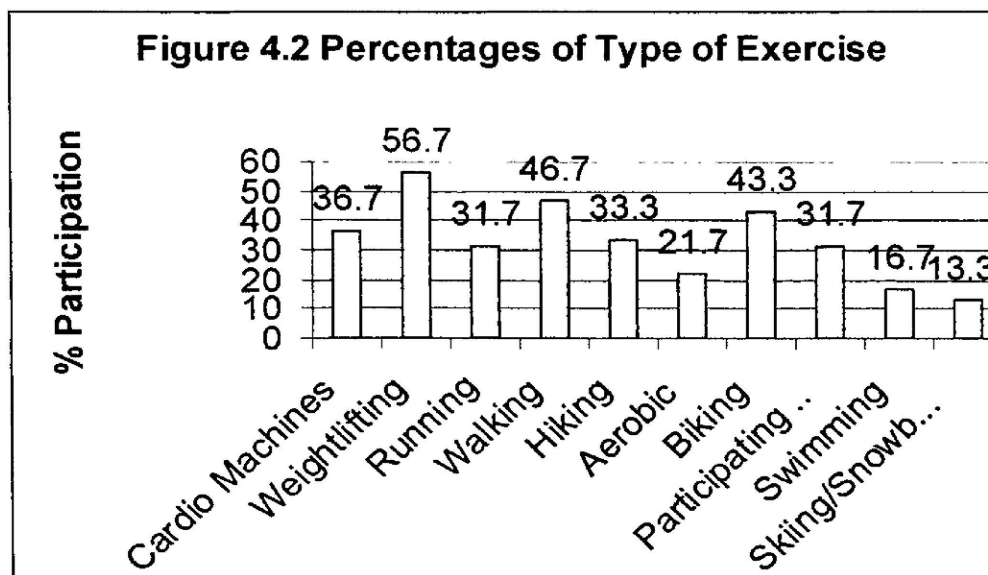
From the total of 60 subjects, 53 (88%) were optimistic and 7 (12%) were pessimistic.

Frequencies from the whole cohort were calculated for times exercised per week, duration of each session, months or years of maintenance, past maintenance of physical activity, the existence of barriers, the variety of barriers, labeling of optimistic or pessimistic and types of exercises. The most common number of times exercised per week was five (30.5%). Figure 4.1 shows percentages of the times per week subjects participated in exercise.

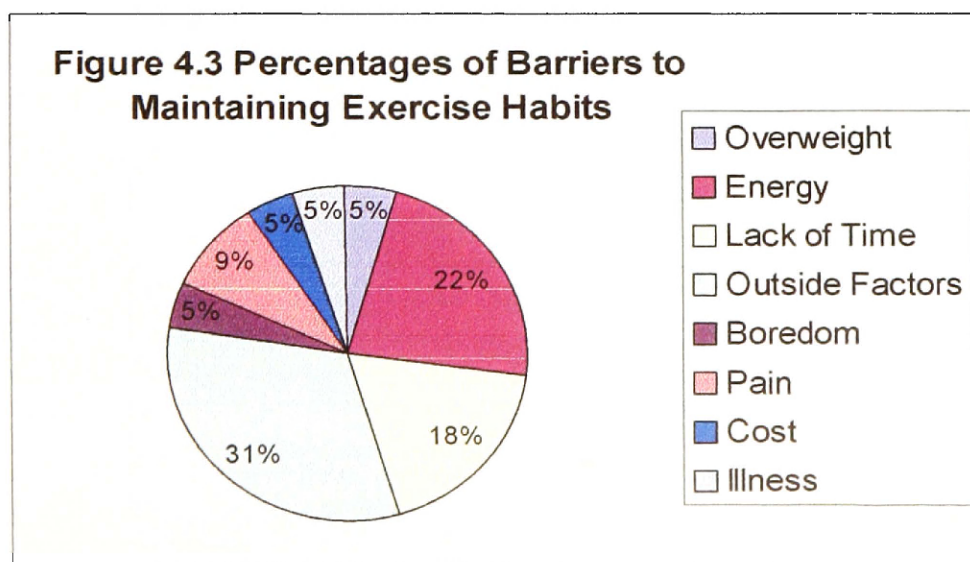


The most frequent duration of each exercise session was 60 minutes (36%). Almost 92% of subjects exercised for more than 30 minutes. Ninety-two percent of subjects had maintained exercise habits for longer than six months previously. The most common type of exercise for subjects was weightlifting at 57%. Figure 4.2 gives the

percentages of types of exercise subjects partake in.



Twenty percent of subjects had experienced barriers to maintaining exercise at one time or another. From the sample population that faced barriers outside factors (family or work) was the most common type of barrier at 31%. Figure 4.3 presents the percentages of the variety of barriers subjects encountered. Subjects who had maintained exercise for seven years or more did not report any barriers.



For the whole cohort, optimism scores ranged from 24 to 70 with a mean score of 54.5. Pessimism scores ranged from 21 to 65 with a mean score of 33.9 (Table 4.1).

Table 4.1: Descriptive Statistics on Whole Cohort

	Minimum	Maximum	Mean	Std. Deviation
AGE (years)	30	59	42.65	8.831
XWEEK	1	7	4.42	1.404
DURATION (minutes)	2	120	61.3	24.477
MAINTENANCE (month)	1	600	140.8	154.984
OPTIMISM SCORE	24	70	54.5	7.6628
PESSIMISM SCORE	21	65	33.9	9.0051

Descriptive statistics of age, times exercised per week, duration of each session, length of maintenance and scores of optimism and pessimism were calculated (Table 4.1). The mean age was 43 years; mean times per week of exercising were 4.4 days; mean duration per session was 61 minutes; mean maintenance was almost 12 years.

Descriptive statistics were calculated separately between optimistic and pessimistic groups (Table 4.2a and Table 4.2b).

Table 4.2a Descriptive Statistics for Optimistic Subjects

	Minimum	Maximum	Mean	Std. Deviation
AGE (years)	30	59	42.85	8.93
XWEEK	1	7	4.42	1.334
DURATION (minutes)	2	120	61.57	24.453
MAINTENANCE (month)	1	600	143.21	159.971
OPTIMISM SCORE	45.5	70	56.3	5.2745
PESSIMISM SCORE	21	45.5	31.5	6.171

Table 4.2b Descriptive Statistics for Pessimistic Subjects

	Minimum	Maximum	Mean	Std. Deviation
AGE (years)	31	57	41.1	8.533
XWEEK	1	7	4.43	1.988
DURATION (minutes)	15	90	59.3	26.525
MAINTENANCE (month)	2	300	122.9	119.353
OPTIMISM SCORE	24	51	40.6	9.0159
PESSIMISM SCORE	46	65	51.9	6.4402

The mean age of optimistic individuals was 43 and pessimistic was 41. The mean number times per week for both were 4.4 days. The mean duration of each session for optimism was 62 minutes and pessimism was 59 minutes. Maintenance mean for optimism was 12 years and pessimism 10 years. Optimistic individuals' mean score for optimism was 56 and for pessimism were 32. Pessimistic individuals' mean score for optimism was 41 and for pessimism were 52.

Exercise Factors Predicting Optimism

Discriminant Functional Analysis was used to calculate exercise factors in predicting optimism (Table 4.3).

Table 4.3 Predictability of Optimism from Exercise Factors of Whole Cohort

	p-value	Predictability
AGE	0.2	63%
EDUCATION	0.29	61%
XWEEK	0.354	51%
DURATION	0.78	75%
MAINTENANCE	0.75	44%

For age, p-value was .2 with a predictability of 63%. Education p-value was .29 and predictability of 61%. Times exercised per week p-value were .29 and predictability

of 51%. Duration of each session p-value was .78 and predictability of 75%.

Maintenance p-value was .75 and predictability of 44%.

Discriminant Functional Analysis was used separately on the female population to calculate if exercise factors could predict optimism (Table 4.4).

Table 4.4 Predictability of Optimism from Exercise Factors of Female Population

	p-value	Predictability
AGE	0.75	49%
EDUCATION	0.82	55%
XWEEK	0.99	47%
DURATION	0.85	47%
MAINTENANCE	0.83	43%

For age, the p-value was .75 and a predictability of 49%. Education p-value was .82 and predictability of 55%. Times exercised per week p-value was .99 and 47% predictability. Duration of each session p-value was .85 and predictability of 47%. Maintenance p-value was .83 and predictability of 43%.

Characteristics of Optimism and Pessimism

Crosstabs were used to calculate frequency distributions by percentages and p-value based on chi-square within optimism and pessimism subjects. Variables were types of exercise, the variety of barriers, past maintenance of physical activity and existence of barriers. Percentages of optimists and pessimist within types of exercise are shown in Table 4.5.

Table 4.5 Percentages of Optimists and Pessimists Within Types of Exercises

	% Optimists	% Pessimists	p-value
Cardio Machines	96	4	0.191
Weightlifting	85	15	0.402
Running	90	10	0.851
Walking	93	7	0.307
Hiking	90	10	0.776
Aerobics	85	15	0.637
Biking	89	11	0.978
Sports	90	10	0.851
Swimming	90	10	0.857
Skiing/Snowboarding	87	13	0.937

Of the subjects who walk as exercise 93% were optimistic and 7% were pessimistic and had a p-value of .31. The subjects who participated in cardiovascular machines 96% were optimistic and 4% were pessimistic subjects and a p-value of .19.

From the overall population 83% had maintained physical activity previously. The subjects who maintained physical activity in the past consisted of 88% optimists and 12% pessimists (Table 4.6). Seven percent of the population had not maintained physical activity in the past. From this sample, 75% were optimistic and 25% were pessimistic.

Table 4.6 Percentages of Optimists and Pessimists within Previously Exercised

	% Optimists	% Pessimists	% Whole Cohort	p-value
Previously Exercised	88%	12%	83%	0.475
Previously Never Exercised	75%	25%	7%	

Seventy-three percent of subjects did not face any barriers to maintaining an exercise program. Of those who experienced barriers 83% were optimistic and 17% were pessimistic. From the sample of subjects who did not face any barriers 89% were optimists and 11% were pessimists.

Table 4.7 Percentages of Optimists and Pessimists within Existence of Barriers

	% Optimists	% Pessimists	% Whole Cohort	p-value
Existence of Barriers	83%	17%	20%	0.663
No Existence of Barriers	89%	11%	73%	

CHAPTER 5: DISCUSSION

Description of Sample Population

Subjects who exercised for seven years or more did not experience any barriers; this consisted of 44.1% of the sample population. Fontaine and Shaw's (1995) research found individuals who are physically active on a regular basis view their activities as fun and enjoyable while those who are not active identify more barriers being involved. This is also established from this research where barriers are not perceived from subjects who have maintained exercise for more than seven years. Subjects who have maintained physical activity for longer periods of time find exercise becomes more a part of their schedule and perceive fewer barriers.

The most common education level for all three groups was bachelor degree. Pessimistic subjects had equal percentages within the rest of the education levels (education levels seen in figure 5.2 on page 33). Optimistic group and the whole cohort differed slightly from the pessimists by having an equal amount of subjects with post-college experience and some college. Both groups had fewer subjects with a high school diploma and associate degree than pessimists.

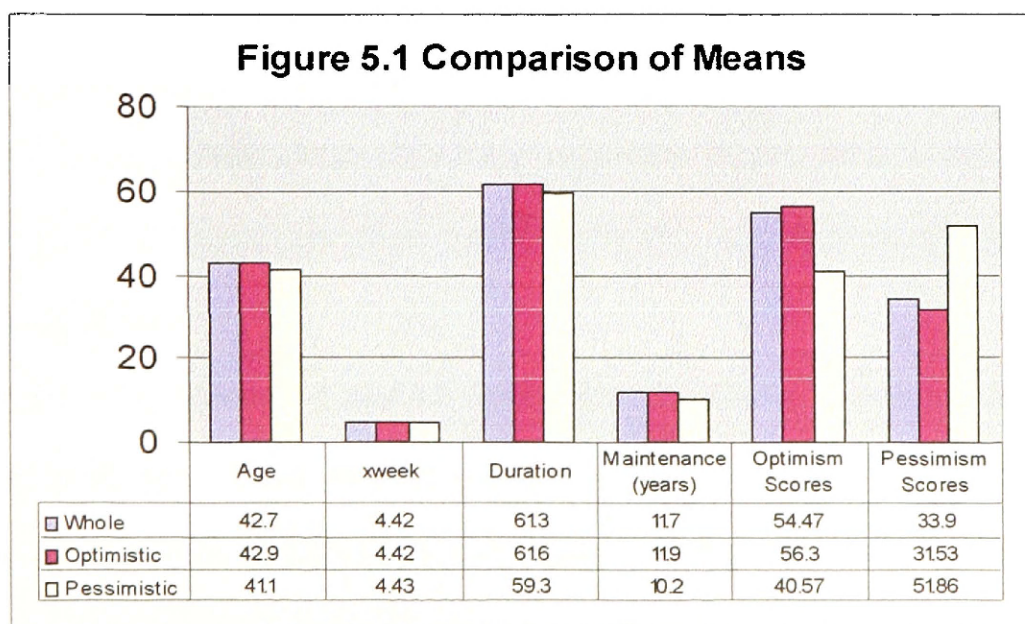
Null Hypothesis

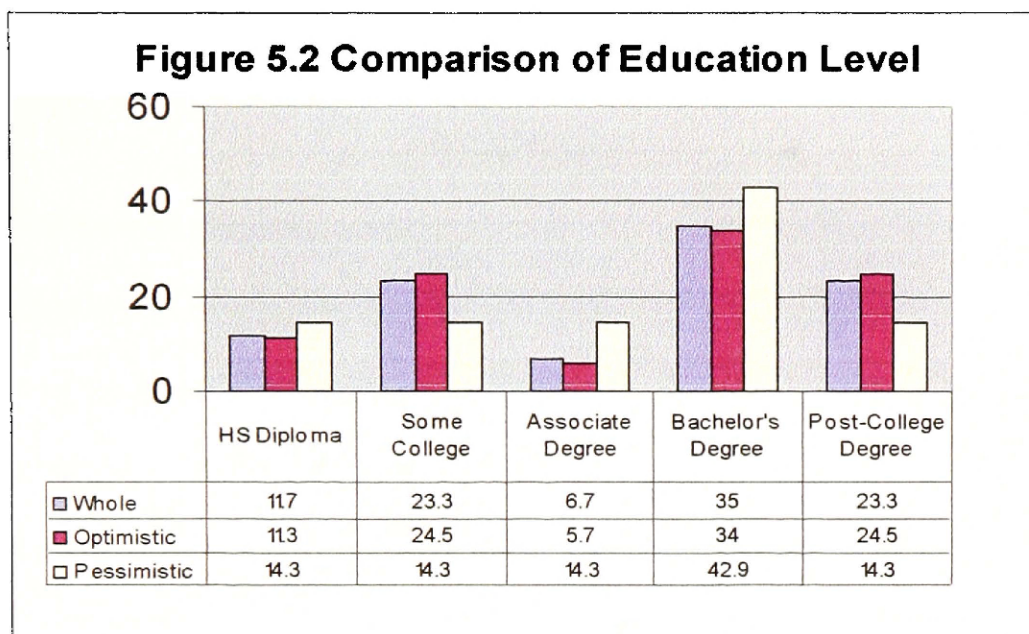
The null hypothesis of no experimentally important or consistent predictability of optimism using exercise factors among 30-60 year olds could not be rejected. Exercise factors of age, education level, times exercised per week, duration of each session and length of maintenance did not significantly predict optimism by having a predictability of

70% and a p-value $\geq .05$. Optimism was found in a variety of an individual's exercise habits.

The Center for Disease Control and Prevention (CDC, 2004a) found physical inactivity was more common in women than men; therefore the female population was examined separately to test if exercise factors predicted optimism. Similar with the whole cohort, no significant results were found; exercise factors did not predict optimism in women. Previous research has found exercise to positively increase mood changes and quality of life in menopausal women.

To examine closer the exercise factors for predicting optimism, the means of times exercised per week, duration of each session, length of maintenance, scores of optimism and pessimism and education level were displayed in graphs comparing the optimistic group, pessimistic group and the whole cohort. Factors of age, times exercised per week, duration of each session, length of maintenance and scores of optimism and pessimism are shown in figure 5.1. Figure 5.2 displays education level.





Age, number times per week and duration of each session were extremely similar in all three groups. Lengths of maintenance for pessimists were lower than the whole cohort and optimists by 1½ years. With the mean of the whole cohort at seven years and the standard deviation of 13 years, there is not much difference of the pessimistic group with the whole cohort or optimistic group.

Figure 5.1 illustrates pessimists having a lower optimism score and higher pessimism score than the whole cohort and optimistic groups. This is expected in order for pessimists to be pessimistic their scores are higher on the pessimism questions than optimism questions.

Examining figures 5.1 and 5.2 shows again no factors stand out in predicting optimism in subjects. These findings are contrary to Kavussanu and McAuley's (1995) study in which they found high-active individuals were more optimistic and less pessimistic than inactive/low active individuals. High-active subjects were defined as

individuals who participated in physical activity four or more times a week.

Research Question

The research question examined if types of exercise and barriers of exercise predicting optimism can be generalized from the sample of exercisers to the larger population of exerciser. The sample population was at a 7 to 1 ratio of optimists to pessimists with a distribution of 88% optimistic and 12% pessimistic. The variables of past maintenance, existence of barriers, the variety of barriers and types of exercise also followed the distribution of 88% optimistic and 12% pessimistic causing p-values of chi-square to be greater than .05. With this finding, the optimism and pessimism groups are not different enough in the variables of types of exercise, the variety of barriers, existence of barriers and past exercise maintenance to generalize that the populations from which the samples are drawn from are also different in these variables.

Two types of exercises did drift away from the distribution of 88% optimists and 12% pessimists, cardiovascular machines and walking. Cardiovascular machines illustrated 8% more optimistic subjects and 8% less pessimistic subjects than the normal distribution. Walking had 5% more optimists and 5% less pessimists. This implies more optimists appear to be walking and exercising on cardiovascular machines than pessimists.

The variables of variety of barriers and existence of barriers had the distribution of subjects at 88% optimists and 12% pessimists. Participating in past maintenance of exercise habits also had the similar distribution of optimistic and pessimistic subjects. It was established 7% of the subjects had not exercised in the past. From the 7% that had

not exercised previously, 75% were optimistic. Even subjects who have not maintained exercise habits previously show optimistic tendencies when experiencing their first bout of exercise.

Summary

Overall the results found factors of age, gender, education level, times exercised per week, duration of each session, length of maintenance, previous exercise maintenance, existence of barriers, the variety of barriers and types of exercise could not predict optimism. Improving individuals' optimism will not help them adhere to an exercise program because optimism is seen within all levels of exercise factors, for example maintaining exercise for a short amount of time or for seven years.

As shown in this study, all varieties of exercise programs contain individuals who are optimistic. Individuals can encounter increases in mood and optimism at the beginning of an exercise program, even if they have not previously exercised before. Seven percent of subjects had not exercised before this current bout of exercise and 75% of them were optimistic. With the results of this study and previous studies optimism can be seen with all varieties of exercise programs. Other research has found that any degree of exercise enhances optimism in individuals by improving mood and stress. Plante et al. (2000) found even the perception of fitness was a good predictor of coping with stress. Individuals feel better and improve psychological functioning because of their conviction from beliefs of physical activity. Subjects who just believed they were physically fit scored high on the hope and self-esteem scales and ranked high with ability to cope with stress. Even the thought of exercise improves one's mood, outlook and optimism.

Annesi's (2004) study on women who have never exercised before found an increase in optimism levels in the first 10 weeks of exercise. A Profile of Mood State was taken at week one with no difference between the control group and exercise group. At the end of 10 weeks the exercise group improved on all four subscales of tension, depression, vigor and fatigue.

Another interpretation of these findings is that individuals who exercise are already optimistic and exercise is one of their optimistic qualities. Gyurcsik and Brawley (2001) found those who had more daily positive thoughts than negative were more motivated to exercise daily and more optimistic to schedule, plan and manage regular weekly exercise for a longer period of time. Optimists engage in regular exercise more than pessimists as part of their tendency to engage in health promoting behaviors (Scheier, 1992; Seligman, 1998). Positive health habits (exercise involvement) are considered adaptive and optimists are presumably the ones who will believe they can benefit from these and engage in health promoting behaviors (Kavussanu & McAuley (1995). Optimistic beliefs of one's health predicted greater attention to risk information and greater levels of recall (Aspinwall, 1996). Optimistic individuals realize health difficulties that arise and have the motivation to engage in health-protective behaviors.

It was anticipated that more questionnaire packets were to be received to better compare the differences that exist between optimists and pessimists. Expectations were that pessimists would show lower maintenance, shorter duration per session, less times per week exercising, previously never been able to maintain exercise for six months and had faced more barriers. It was expected to not see any difference between optimistic and pessimistic individuals in gender, age, education and types of activities. When

questionnaire packets were being received back, it was realized the maintenance question could have been misleading. There was a definition of maintenance at the top of the Physical Activity Survey, but it was not believed subjects read it or told the truth about maintenance. Individuals considered they are maintaining exercise even when taking a month off at a time. More subjects believed the question asked how long they have participated in physical activity all together.

Recommendations

Future recommendations are based on limitations faced throughout this study and when analyzing the data.

The most influential limitation on this study was the sample size. Out of the 140 questionnaire packets given out, 72 were received back with only 60 able to use on the study. When starting to calculate the Optimism and Pessimism Questionnaire for each subject, it was realized that a larger sample population was needed in order to have an equal ratio of optimists and pessimists. With one side skewed towards optimism, it makes it difficult to construct conclusions about the sample. The biggest suggestion for future recommendation is the need for a larger sample population. With a larger sample size, the chance of receiving more pessimistic individuals greatly increases.

Another limitation was the season; all of the surveys were filled out during the summer months of June through August. A recommendation would be handing out the questionnaire packet during different times throughout the year to see if seasons provide a different ratio of optimistic and pessimistic individuals. One interesting time of year to examine would be after New Year's resolutions. Researchers might be able to find more

individuals who are not able to maintain exercise habits for long periods of time and are more sporadic in their exercising. This leads to another recommendation to find individuals who have tried to maintain exercise in the past and examine their optimism levels. Trying to recruit volunteers outside of fitness facilities might be an idea to accomplish this, but it would be more difficult to find subjects who exercise sporadically.

One limitation to this study was the demographics. All subjects were from an urban area that was mainly Caucasians and more subjects were from the female population. It would be interesting in future research to get a larger demographic sample, ethnic backgrounds and an equal sample of males and females. Different areas (urban areas verses rural areas) would be interesting to look at and study the differences of types of exercises or barriers between the two groups. Different ethnic backgrounds might prove to reveal different results or have dissimilar levels of optimism toward exercise habits.

Another limitation with this study was the questionnaire packet. An individual's optimism levels vary throughout the day and depending on types of activities an individual does during the day, results may differ. Thayer (1987) found optimism and pessimism levels differ depending on the time of day and energetic arousal. In late morning or after exercising energetic and calm state was positively associated with optimism, happiness and physical good feelings. The questionnaire packet can be expanded by having subjects keep a journal and write down a typical month of exercising. Included would be the types of exercise they did, how many times per week, duration of each session and barriers they faced preventing them from exercising on certain days. Subjects possibly will also write down feelings and moods they were

feeling during that time of exercise and before and after.

Another recommendation to look at is other factors of exercise adherence besides optimism, this study only concentrated on the one. Other studies have looked at trait anxiety, self-esteem, depression and many more. Other factors could help individuals start or maintain a physical activity program.

With only 40% of aging adults world wide adequately exercising and 60% of individuals initiating a regular exercise program, only to dropout in 6 months, something needs to be done (CDC, 2004a). It is important to find factors that aid individuals in starting and maintaining an exercise program. Middle-age individuals must be conscious of their health and exercise behavior to better maintain their bodies into elderly years. Numerous studies need to be done to give a better understanding of how to keep individuals adhering to an exercise program. This study looked at optimism within 30-60 year olds to see if it can be predicted from exercise factors. It was found optimism was seen in all variety of exercise factors and could not be predicted from any one exercise factor.

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APPENDIX A:

MAY 06 2004

For Internal
Use OnlyPROPOSAL # 101-04
Form RA-108
(Rev. 11/03)UNIVERSITY OF MONTANA
VICE PRESIDENT FOR RESEARCH
The University of Montana
INSTITUTIONAL REVIEW BOARD (IRB)
CHECKLIST

Submit one completed copy of this Checklist, including any required attachments, for each project involving human subjects. The IRB meets monthly to evaluate proposals, and approval is usually granted for one year. See *IRB Guidelines and Procedures* for details.

Project Director: Adrienne Carlson Dept.: Health: Human Performance Phone: 721-6677

E-mail: acarson33@hotmail.com

Signature: Adrienne Carlson Date: 05/06/04

Co-Director(s): _____ Dept.: _____ Phone: _____

Project Title: The Investigation of the Perceived Relationship of Optimism and Exercise

Project Description: To explore the possible relationship between optimism and exercise habits of 55-55 year old routine exercisers.
(in non-technical language)

All investigators, including faculty supervisors, on this project must complete the self-study course on protection of human research subjects, available at the UM IRB website: <http://www.umt.edu/research/irb.htm>.

Certification: I/We have completed the course - (Use additional page if necessary)

Signature	Date	Signature	Date
<u>Adrienne Carlson</u>	<u>05/06/04</u>	_____	_____

Students Only:

Faculty Supervisor: Arthur M. Miller Dept.: Health: Human Performance Phone: 248-4885238

Signature: _____
(My signature confirms that I have read the IRB Checklist and attachments and agree that it accurately represents the planned research and that I will supervise this research project.)

For IRB Use Only

IRB Determination:

☒ Approved Exemption from Review — Exemption # 2

____ Approved by Expedited/Administrative Review

Full IRB Determination:

- ____ Approved
____ Conditional Approval (see attached memo)
____ Resubmit Proposal (see attached memo)
____ Disapproved (see attached memo)

Signature IRB Chair: Stella Hoffland Date: 5/14/04
(over)

The Investigation of the Perceived Predictability of Optimism and Exercise

Purpose: The purpose of this study is to investigate the perceived relationship between optimism and exercise maintenance of routine exercisers.

Benefits: The benefits of this research will help future health professionals form programs that will keep individuals involved in exercising. This study will help give a better understanding to why some individuals are able to maintain an exercise routine, while others are not.

Procedure: If you choose to participate in this study, a survey packet will be issued to you containing a physical activity survey and the Optimism/Pessimism Questionnaire. The physical activity survey goes over your current level of exercise-the frequency, type, and duration. The Optimism/Pessimism Questionnaire asks a variety of questions to measure your level of optimism and pessimism. I ask that you fill out the surveys honestly and to the best of your ability. After you complete the survey, please place it in the manila envelope. A self-addressed envelope will also be attached if you choose to take the survey packet home with you.

Voluntary Participation/ Withdrawal: Your participation is strictly voluntary, however I hope you will complete the survey as your response will help assess the relationship of optimism and exercise maintenance.

If you do not feel comfortable about answering any of the questions, feel free to skip it. If at anytime you wish to withdraw from the study, you may do so without penalty.

Responses are completely anonymous, please do not write your name or put any identify marks on the survey. Results of the survey will in no way be associated with you.

Questions

If you have any questions about the research now or during this study contact: Adrienne Carlson at (406) 721-2607

Investigator: Adrienne Carlson
 Primary Investigator
 Health and Human Performance
 109 McGill Hall
 The University of Montana
 Missoula, MT 59812
 (406) 243-5288 (HHP office)

Thank you very much for your time and feel free to contact me if you have any questions.

11 Point Summary for the Institutional Review Board at The University of Montana

1. Purpose of the research project

The purpose of this study is to associate positive psychology to performance psychology through exploring the possible relationship of optimism and exercise habits of 35-55 year old routine exercisers.

Researching aspects of exercise maintenance is important because non-adherence and dropout rates among exercise participants, within the United States, are exceptionally high, with only 15% of the population participating in regular activity and 25% reporting no physical activity at all (Gyurcsik, 2001). The question becomes how to keep individuals active and involved in physical activity for a long period of time. A possible solution is to investigate an individual's level of optimism. It is hypothesized that 35-55 year old individuals with higher levels of optimism will sustain exercise habits for a longer period of time than those with lower levels of optimism.

2. Subjects

Subjects are of both genders who are currently exercising or have exercised in the past. Subjects will be recruited from local health clubs, indoor rock climbing walls, swimming pools, and city league sports in the Missoula, Montana area. Subjects 18 or older will be asked to fill out the survey, however subjects between the ages of 35-55 will be the age group that is concentrated on. If a sufficient amount of surveys is collected from this age group, the rest of the surveys will be thrown out.

3. Recruiting Subjects

The primary researcher will contact the managers of the local health clubs, rock-climbing wall, swimming pool, and city league sports in Missoula, Montana about distributing the survey packets to their members. With approval, the primary researcher will go to each fitness area and recruit any interested volunteers either before or after their exercise routine. Subjects who agree to participate will receive a survey packet. The survey packet will consist of a brief overview of the study, a physical activity survey and the Optimism/Pessimism Scale. Subjects may either fill out the packet at the fitness area or bring it home with them and send back by way of a self-addressed envelope to the primary researcher by a designated date.

4. Where the study will take place

With permission from the managers of the fitness areas, the study will take place at local health clubs, swimming pools, rock-climbing wall, and at city league sports in Missoula, Montana.

5. Activities the subjects will perform

Subjects will take the Optimism and Pessimism Questionnaire and a physical activity survey. William N. Dember and colleagues developed the Optimism and Pessimism Questionnaire, which measure each subject's level of optimism and pessimism. The questionnaire consists of 56 statements; 18 measuring pessimism, 18 measuring optimism, and 20 filler items. An example of an optimism statement is, "When I undertake something new, I expect to succeed." A pessimism statement is "Even when things in my life are going okay, I expect them to get worse soon." Each statement is scored on a 4-point Likert Scale with 1 = *strongly disagree* and 4 = *strongly agree*. Optimism and pessimism statements will be summed to provide a single score for each subscale.

The physical activity survey will be given to gain an understanding of each subject's level of physical activity. The survey consists of nine questions. The first question asks subjects to indicate whether or not they are currently exercising. If they are, questions will continue to determine how many times a week the subjects exercise, the average duration, maintenance of exercise programs, past exercise habits, and exercise activities in which they are currently participating. The subject's age will also be asked.

6. Benefits of the Research

The benefits of this research will help future health professionals form programs that will keep individuals involved in exercising. The study especially takes a look at an important age for individuals to be conscious of their health and exercise behavior in order to maintain healthier bodies into their elderly years. This study will help give a better understanding to why some individuals are able to maintain an exercise routine, while others are not.

7. Risks and Discomforts

There are no anticipated risks in completing this survey. Subject's names will not be tied to responses in any way. The survey should not be uncomfortable for anyone, since it is a voluntary and anonymous. Each individual question is voluntary. If any question makes an individual feel uncomfortable to answer, they may feel free to skip

8. Means to minimize each such deleterious effect

This survey is completely voluntary and anonymous. If any subject does not feel comfortable in answering any of the questions, they may feel free to skip it. If at anytime the subject feels uneasy or unpleasant, they may withdraw or not finish the survey. There will be a form attached to the surveys with a description of the study and contact information if they have questions about the study.

9. Protection of the subject's personal privacy

There is protection of the individual's personal privacy by having the subjects fill out the survey anonymously. An information sheet attached to the survey will remind subjects the survey is anonymous and voluntary and they may stop at anytime. Subjects will be asked to refrain from put any identifying marks on his/her survey.

10. Written consent form and participation information sheets

No consent form will be given to participants.

11. Waiver of written informed consent

No waiver will be needed.

Gyurcsik, N.C., & Brawley, L.R. (2001). Is the glass half-full or half-empty? The relationship of big and little optimism with acute and longer term exercise-related social cognitions. Journal of Applied Biobehavioral Research, 6 (2), 108-127.

APPENDIX B

The Investigation of the Perceived Predictability of Optimism and Exercise

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Voluntary Participation/ Withdrawal: Your participation is strictly voluntary, however I hope you will complete the survey as your response will help assess the relationship of optimism and exercise maintenance.

If you do not feel comfortable about answering any of the questions, feel free to skip it. If at anytime you wish to withdraw from the study, you may do so without penalty.

Responses are completely anonymous, please do not write your name or put any identify marks on the survey. Results of the survey will in no way be associated with you.

Questions

If you have any questions about the research now or during this study contact: Adrienne Carlson at (406) 721-2607

Investigator: Adrienne Carlson
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Thank you very much for your time and feel free to contact me if you have any questions.

APPENDIX C

Optimism and Pessimism Questionnaire

by William N. Dember and Others

Instructions: The 56 statements printed below represent individual differences in viewpoint. Using the scale shown below, please respond with your own point of view to all of the statements: for example, if you strongly agree with a statement then circle 1 (S.A.). Do not spend a lot of time thinking about each one; just indicate your first impression. Remember, respond to these statements according to how you feel about them right now.

- 1 – strongly agree**
- 2 – agree**
- 3 – disagree**
- 4 – strongly disagree**

1 – strongly agree
 2 – agree
 3 – disagree
 4 – strongly disagree

- | | | | | |
|---|---|---|---|---|
| 1. I like people I get to know | 1 | 2 | 3 | 4 |
| 2. It is best not to set your hopes too high since you will probably be disappointed. | 1 | 2 | 3 | 4 |
| 3. There is so much to be done and so little time to do it in. | 1 | 2 | 3 | 4 |
| 4. I have a tendency to make mountains out of molehills. | 1 | 2 | 3 | 4 |
| 5. Rarely do I expect good things to happen. | 1 | 2 | 3 | 4 |
| 6. Everything changes so quickly these days that I often have trouble deciding which are the right rules to follow. | 1 | 2 | 3 | 4 |
| 7. All in all the world is a good place. | 1 | 2 | 3 | 4 |
| 8. When it comes to my future plans and ambitions in life, I expect more to go wrong than right. | 1 | 2 | 3 | 4 |
| 9. My hardest battles are with myself. | 1 | 2 | 3 | 4 |
| 10. I believe there's not much hope for the human race. | 1 | 2 | 3 | 4 |
| 11. It does not take me long to shake off a bad mood. | 1 | 2 | 3 | 4 |
| 12. If you hope and wish for something long and hard enough, you will eventually get it. | 1 | 2 | 3 | 4 |
| 13. People get ahead by using 'pull' and not because of what they know. | 1 | 2 | 3 | 4 |
| 14. Even when things in my life are going okay, I expect them to get worse soon. | 1 | 2 | 3 | 4 |
| 15. With enough faith, you can do almost anything. | 1 | 2 | 3 | 4 |
| 16. I enjoy myself most when I am alone, away from other people. | 1 | 2 | 3 | 4 |
| 17. When I undertake something new, I expect to succeed. | 1 | 2 | 3 | 4 |

1 – strongly agree
 2 – agree
 3 – disagree
 4 – strongly disagree

- | | | | | |
|---|---|---|---|---|
| 18. Honesty is the best policy in all cases. | 1 | 2 | 3 | 4 |
| 19. I generally look at the brighter side of life. | 1 | 2 | 3 | 4 |
| 20. If I make a decision on my own, I can pretty much count on the fact that it will turn out to be a poor one. | 1 | 2 | 3 | 4 |
| 21. I generally make light of my problems. | 1 | 2 | 3 | 4 |
| 22. It is always a good thing to be frank. | 1 | 2 | 3 | 4 |
| 23. Where there's a will, there's a way. | 1 | 2 | 3 | 4 |
| 24. I have a tendency to blow up problems so they seem worse than they really are. | 1 | 2 | 3 | 4 |
| 25. All in all, it is better to be humble and honest than important and dishonest. | 1 | 2 | 3 | 4 |
| 26. As time goes on, things will most likely get worse. | 1 | 2 | 3 | 4 |
| 27. It is the slow, steady worker who usually accomplishes the most in the end. | 1 | 2 | 3 | 4 |
| 28. When I go to a party I expect to have fun. | 1 | 2 | 3 | 4 |
| 29. Times are getting better. | 1 | 2 | 3 | 4 |
| 30. Everyone should have an equal chance and an equal way. | 1 | 2 | 3 | 4 |
| 31. Better to expect defeat; then it doesn't hit so hard when it comes. | 1 | 2 | 3 | 4 |
| 32. It is wise to flatter important people. | 1 | 2 | 3 | 4 |
| 33. I expect to achieve most of the things I want to in life. | 1 | 2 | 3 | 4 |
| 34. It seems the cards of life are stacked against me. | 1 | 2 | 3 | 4 |
| 35. What is lacking in the world today is the old kind of friendship that lasted for a lifetime. | 1 | 2 | 3 | 4 |
| 36. When the weatherman predicts 50% chance of rain, you might as well count on seeing rain. | 1 | 2 | 3 | 4 |
| 37. Before an interview, I am usually confident that things will go well. | 1 | 2 | 3 | 4 |

1 – strongly agree
 2 – agree
 3 – disagree
 4 – strongly disagree

- | | | | | |
|---|---|---|---|---|
| 38. Sometimes I feel down, but I bounce right back again. | 1 | 2 | 3 | 4 |
| 39. The future seems too uncertain for people to make serious plans. | 1 | 2 | 3 | 4 |
| 40. When I have undertaken a task, I find it difficult to set it aside even for a short time. | 1 | 2 | 3 | 4 |
| 41. Tenderness is more important than love. | 1 | 2 | 3 | 4 |
| 42. When gambling, I expect to lose. | 1 | 2 | 3 | 4 |
| 43. Anybody who is willing to work hard has a good chance for success. | 1 | 2 | 3 | 4 |
| 44. The future looks very dismal. | 1 | 2 | 3 | 4 |
| 45. If I had to choose between happiness and greatness, I'd choose greatness. | 1 | 2 | 3 | 4 |
| 46. Minor setback are something I usually ignore. | 1 | 2 | 3 | 4 |
| 47. In general, things turn out all right in the end. | 1 | 2 | 3 | 4 |
| 48. It is better to be a dead hero than a live coward. | 1 | 2 | 3 | 4 |
| 49. Give me 50/50 odds and I will choose the wrong answer every time. | 1 | 2 | 3 | 4 |
| 50. It is hard to get ahead without cutting corners here and there. | 1 | 2 | 3 | 4 |
| 51. If I were in competition and contestants were narrowed down to myself and one other person, I would expect to be runner-up. | 1 | 2 | 3 | 4 |
| 52. April showers bring May flowers. | 1 | 2 | 3 | 4 |
| 53. I can be comfortable with nearly all kinds of people. | 1 | 2 | 3 | 4 |
| 54. The worst defeats come after the best victories. | 1 | 2 | 3 | 4 |
| 55. In the history of the human race there have probably been just a handful of really great thinkers. | 1 | 2 | 3 | 4 |
| 56. Every cloud has a silver lining. | 1 | 2 | 3 | 4 |

GRADING OF OPTIMISM AND PESSIMISM QUESTIONNAIRE

Optimism Items

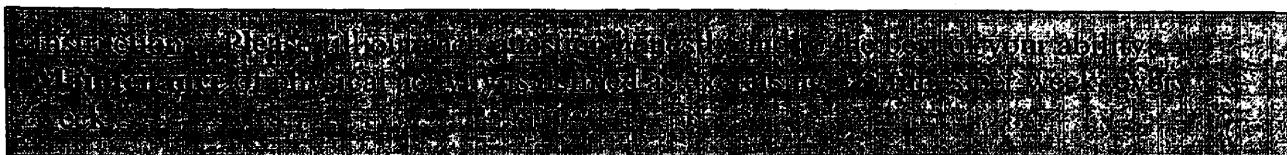
7
11
12
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38
43
46
47
52
56

Pessimism Items

2
4
5
8
10
14
20
24
26
31
34
36
39
42
44
49
51
54

Note: Responses are reverse-scored (e.g. 4-1, 1-4, 3-2, 2-3)

PHYSICAL ACTIVITY SURVEY



Age _____

Gender _____

Educational Background

- ☐ GED ☐ High School Diploma ☐ Some College ☐ Associate Degree
☐ Bachelor's Degree ☐ Post-college Degree

1. Do you participate in any physical activity? This includes walking, jogging, participating in sports, weightlifting, aerobics, swimming, etc.
☐ Yes ☐ No
2. How many times a week do you typically participate in physical activity?
 _____ times per week
3. What is the duration of your activity per session?
 _____ minutes
4. How long have you maintained your current level of physical activity? (Look at definition within instructions).
 _____ months
 _____ years
5. If maintenance has been less than 6 months, have you consistently participated in physical activity in the past?
☐ Never ☐ Sometimes ☐ Always
6. Have you ever been able to maintain physical activity for 6 months or more before?
☐ Yes ☐ No
7. Do you commonly find it hard to maintain a physical activity program for more than 6 months?
☐ Yes ☐ No
8. If you answered yes to #7, what got in the way of your exercise program?

9. What are the activities you typically do for exercise?

